GRADE 4 SCIENCE

The distinguished science student, when compared to age appropriate goals and standards, is considered to be 'above grade level' in terms of engaging in scientific activity and learning. The words 'extensive' and 'sophisticated' are used often as descriptors for this level. Extensive should be understood as the student provides fully developed responses which include supporting, relevant details that are accurate and appropriate, vocabulary and concepts from the discipline are used, and connections to the real world, across disciplines or within the discipline, are made. 'Sophisticated' implies that the student's work reflects maturity above grade level, and responses, which are complex, supported by elaborate details.

The proficient science student, when compared to age appropriate goals and standards, is considered to be 'on target' in terms of engaging in scientific activity and learning. The word 'appropriate' is used often as a descriptor for this level. When it is used, it suggests that the student provides responses that include support/justification, relevant details, and that demonstrate an understanding of concepts and vocabulary. Occasional inaccuracies, which do not interfere with conceptual understanding, may be present.

The apprentice science student, when compared to age appropriate goals and standards, is considered to be 'developing' in terms of engaging in scientific activity and learning. The word 'basic' is used often as a descriptor for this level. When it is used, it is intended to suggest that the student provides partial responses or responses, which are limited in either accuracy or explanation, and which demonstrate limited understanding of the vocabulary and concepts of the discipline.

The novice science student, when compared to age appropriate goals and standards, is considered to be more of a 'beginner' in terms of engaging in scientific activity and learning. The word 'minimal' is used often as a descriptor for this level. When it is used, it is intended to suggest that the student demonstrates little understanding of concepts and vocabulary, and that responses include inaccuracies/misconceptions and/or little explanation. The following describe science performance:

	DISTINGUISHED	PROFICIENT	APPRENTICE	NOVICE
	Student demonstrates extensive	Student demonstrates appropriate	Student demonstrates basic	Student demonstrates minimal
	knowledge of science content as outlined	knowledge of science content as	knowledge of science content as	knowledge of science content as
	in the core content (i.e., Properties of	outlined in the core content (i.e.,	outlined in the core content (i.e.,	outlined in the core content (i.e.,
	Objects and Materials; Position and	Properties of Objects and	Properties of Objects and	Properties of Objects and Materials;
	Motion of Objects; Light, Heat,	Materials; Position and Motion of	Materials; Position and Motion of	Position and Motion of Objects; Light,
	Electricity, and Magnetism; Properties of	Objects; Light, Heat, Electricity,	Objects; Light, Heat, Electricity,	Heat, Electricity, and Magnetism;
	Earth Materials; Objects in the Sky;	and Magnetism; Properties of	and Magnetism; Properties of	Properties of Earth Materials; Objects in
	Changes in Earth and Sky; The	Earth Materials; Objects in the	Earth Materials; Objects in the	the Sky; Changes in Earth and Sky; The
Content	Characteristics of Organisms; Life	Sky; Changes in Earth and Sky;	Sky; Changes in Earth and Sky;	Characteristics of Organisms; Life
Content	Cycles of Organisms; Organisms and	The Characteristics of Organisms;	The Characteristics of Organisms;	Cycles of Organisms; Organisms and
	Their Environments).	Life Cycles of Organisms;	Life Cycles of Organisms;	Their Environments).
		Organisms and Their	Organisms and Their	
		Environments).	Environments).	

	DISTINGUISHED	PROFICIENT	APPRENTICE	NOVICE
Process/Inquiry	Student demonstrates sophisticated application of appropriate science process/inquiry skills (i.e., question, observe, use simple equipment and skills, predict, use evidence to develop reasonable explanations, design and conduct simple scientific investigations, review other students' investigations and explanations) to solve problems and /or address issues related to Science and Technology, Science in Personal and Social Perspectives, and History and Nature of Science.	Student demonstrates application of appropriate science process/inquiry skills (i.e., question, observe, use simple equipment and skills, use evidence to develop reasonable explanations, design and conduct simple scientific investigations, review other students' investigations and explanations) to solve problems and /or address issues related to Science and Technology, Science in Personal and Social Perspectives, and History and Nature of Science.	Student demonstrates application of some appropriate science process/inquiry skills (i.e., question, observe, use simple equipment and skills, use evidence to develop reasonable explanations, design and conduct simple scientific investigations, review other students' investigations and explanations) to solve problems and /or address issues related to Science and Technology, Science in Personal and Social Perspectives, and History and Nature of Science.	Student demonstrates ineffective application of appropriate science process/inquiry skills (i.e., question, observe, use simple equipment and skills, use evidence to develop reasonable explanations, design and conduct simple scientific investigations, review other students' investigations and explanations) to solve problems and /or address issues related to Science and Technology, Science in Personal and Social Perspectives, and History and Nature of Science.
Themes/ Concepts	Student demonstrates extensive understanding of unifying science themes/concepts (i.e., Patterns, Systems, Scale and Models, Constancy, and Change Over Time).	Student demonstrates appropriate understanding of unifying science themes/concepts (i.e., Patterns, Systems, Scale and Models, Constancy, and Change Over Time).	Student demonstrates basic, sometimes fragmented, understanding of unifying science themes/concepts (i.e., Patterns, Systems, Scale and Models, Constancy, and Change Over Time).	Student demonstrates minimal understanding of unifying science themes/concepts (i.e., Patterns, Systems, Scale and Models, Constancy, and Change Over Time).
<u>Communication</u>	Student demonstrates sophisticated communication skills by organizing information; representing data in several ways (e.g., graphs, drawings, tables, words); communicating (e.g., draw, graph, write) designs, procedures, observations, and results of scientific investigations; using evidence to support conclusions; using appropriate vocabulary; and communicating in a form suited to the purpose and audience.	Student demonstrates appropriate communication skills by organizing information; representing data in more than one way (e.g., graphs, drawings, tables, words); communicating designs, procedures, observations, and results of scientific investigations; using evidence to support conclusions, using appropriate vocabulary; and communicating in a form suited to the purpose and audience.	Student demonstrates basic communication skills (e.g., information organization; representation of data; communication of designs, procedures, observations, and results of investigations; supporting with evidence, using appropriate vocabulary; and addressing purpose and audience).	Student demonstrates ineffective communication skills. Lacks skill in organizing information; representing data (e.g., graphs, drawings, tables, words); communicating designs, procedures, observations, and results of scientific investigations; using evidence to support conclusions; using appropriate vocabulary; and communicating in a form suited to the purpose and audience.
Critical Thinking	Student consistently demonstrates use of critical thinking skills (e.g., compares, contrasts, classifies, analyzes errors, synthesizes, summarizes, uses analogies).	Student demonstrates appropriate use of critical thinking skills (e.g., compares, contrasts, classifies, analyzes errors, synthesizes, summarizes, uses analogies).	Student demonstrates <i>basic</i> use of critical thinking skills (e.g., compares, contrasts, classifies, analyzes errors, synthesizes, summarizes, uses analogies).	Student demonstrates <i>minimal</i> use of critical thinking skills (e.g., compares, contrasts, classifies, analyzes errors, synthesizes, summarizes, uses analogies).

GRADE 7 SCIENCE

A paper and pencil test cannot assess important science skills such as gathering data, designing and conducting experiments, and using scientific equipment. These descriptors relate to what can be assessed.

The distinguished science student, when compared to age appropriate goals and standards, is considered to be 'above grade level' in terms of engaging in scientific activity and learning. The words 'extensive' and 'sophisticated' are used often as descriptors for this level. Extensive should be understood as the student provides fully developed responses which include supporting, relevant details that are accurate and appropriate, vocabulary and concepts from the discipline are used, and connections to the real world, across disciplines or within the discipline, are made. 'Sophisticated' implies that the student's work reflects maturity above grade level, and responses, which are complex, supported by elaborate details.

The proficient science student, when compared to age appropriate goals and standards, is considered to be 'on target' in terms of engaging in scientific activity and learning. The word 'appropriate' is used often as a descriptor for this level. When it is used, it suggests that the student provides responses that include support/justification, relevant details, and that demonstrate an understanding of concepts and vocabulary. Occasional inaccuracies, which do not interfere with conceptual understanding, may be present.

The apprentice science student, when compared to age appropriate goals and standards, is considered to be 'developing' in terms of engaging in scientific activity and learning. The word 'basic' is used often as a descriptor for this level. When it is used, it is intended to suggest that the student provides partial responses or responses which are limited in either accuracy or explanation, and which demonstrate limited understanding of the vocabulary and concepts of the discipline.

The novice science student, when compared to age appropriate goals and standards, is considered to be more of a 'beginner' in terms of engaging in scientific activity and learning. The word 'minimal' is used often as a descriptor for this level. When it is used, it is intended to suggest that the student demonstrates little understanding of concepts and vocabulary, and that responses include inaccuracies/misconceptions and/or little explanation. The following describe science performance:

	DISTINGUISHED	PROFICIENT	APPRENTICE	NOVICE
	Student demonstrates extensive	Student demonstrates appropriate	Student demonstrates basic	Student demonstrates minimal
	knowledge of science content as			
	outlined in the core content (i.e.,			
	Properties and Changes of			
	Properties in Matter; Motion and			
	Forces; Transfer of Energy;			
	Structure of the Earth System:			
	Lithosphere, Hydrosphere,	Lithosphere, Hydrosphere,	Lithosphere, Hydrosphere,	Lithosphere, Hydrosphere,
	Atmosphere; Earth's History; Earth			
	in the Solar System; Structure and			
<u>Content</u>	Function in Living Systems;			
	Regulation and Behavior;	Regulation and Behavior;	Regulation and Behavior;	Regulation and Behavior;
	Reproduction and Heredity;	Reproduction and Heredity;	Reproduction and Heredity;	Reproduction and Heredity;
	Diversity and Adaptations of			
	Organisms; Populations and	Organisms; Populations and	Organisms; Populations and	Organisms; Populations and
	Ecosystems).	Ecosystems).	Ecosystems).	Ecosystems).
	1			

	DISTINGUISHED	PROFICIENT	APPRENTICE	NOVICE
	Student demonstrates sophisticated	Student demonstrates application of	Student demonstrates application of	Student demonstrates ineffective
	application of appropriate science	appropriate science process/inquiry	some appropriate science	application of appropriate science
	process/inquiry skills (i.e., refines	skills (i.e., refines and refocuses	process/inquiry skills (i.e., refines	process/inquiry skills (i.e., refines
	and refocuses questions, uses	questions, uses appropriate	and refocuses questions, uses	and refocuses questions, uses
	appropriate equipment, tools,	equipment, tools, techniques,	appropriate equipment, tools,	appropriate equipment, tools,
	techniques, technology, and	technology, and mathematics to	techniques, technology, and	techniques, technology, and
	mathematics to gather, analyze, and	gather, analyze, and interpret	mathematics to gather, analyze, and	mathematics to gather, analyze, and
	interpret scientific data, uses	scientific data, uses evidence to	interpret scientific data, uses	interpret scientific data, uses
Process/Inquiry	evidence to develop scientific	develop scientific explanations,	evidence to develop scientific	evidence to develop scientific
	explanations, designs and conducts	designs and conducts scientific	explanations, designs and conducts	explanations, designs and conducts
	scientific investigations, reviews and	investigations, reviews and analyzes	scientific investigations, reviews and	scientific investigations, reviews and
	analyzes others' investigations) to	others' investigations) to solve	analyzes others' investigations) to	analyzes others' investigations) to
	solve problems and /or address	problems and /or address issues	solve problems and /or address	solve problems and /or address
	issues related to Science and	related to Science and Technology,	issues related to Science and	issues related to Science and
	Technology, Science in Personal	Science in Personal and Social	Technology, Science in Personal	Technology, Science in Personal
	and Social Perspectives, and History	Perspectives, and History and	and Social Perspectives, and History	and Social Perspectives, and History
	and Nature of Science.	Nature of Science.	and Nature of Science.	and Nature of Science.
	Student demonstrates extensive	Student demonstrates appropriate	Student demonstrates basic,	Student demonstrates minimal
	understanding of unifying science	understanding of unifying science	sometimes fragmented,	understanding of unifying science
Themes/Concepts	themes/concepts (i.e., Patterns,	themes/concepts (i.e., Patterns,	understanding of unifying science	themes/concepts (i.e., Patterns,
Themes/Concepts	Systems, Scale and Models,	Systems, Scale and Models,	themes/concepts (i.e., Patterns,	Systems, Scale and Models,
	Constancy, and Change Over Time).	Constancy, and Change Over Time).	Systems, Scale and Models,	Constancy, and Change Over Time).
			Constancy, and Change Over Time).	
	Student demonstrates sophisticated	Student demonstrates appropriate	Student demonstrates basic	Student demonstrates ineffective
	communication skills by organizing	communication skills by organizing	communication skills (e.g.,	communication skills. Lacks skill in
	information; representing data in	information; representing data in	information organization;	organizing information; representing
	several ways (e.g., graphs, drawings,	more than one way (e.g., graphs,	representation of data;	data (e.g., graphs, drawings, tables,
	tables, words); communicating (e.g.,	drawings, tables, words);	communication of designs,	words); communicating designs,
Communication	draw, graph, write) designs,	communicating designs, procedures,	procedures, observations, and results	procedures, observations, and results
Communication	procedures, observations, and results	observations, and results of	of investigations; supporting with	of scientific investigations; using
	of scientific investigations; using	scientific investigations; using	evidence; using appropriate	evidence to support conclusions;
	evidence to support conclusions;	evidence to support conclusions;	vocabulary; and addressing purpose	using appropriate vocabulary; and
	using appropriate vocabulary; and	using appropriate vocabulary; and	and audience).	communicating in a form suited to
	communicating in a form suited to	communicating in a form suited to		the purpose and audience.
	the purpose and audience.	the purpose and audience.		
	Student consistently demonstrates	Student demonstrates appropriate	Student demonstrates basic use of	Student demonstrates <i>minimal</i> use of
	use of critical thinking skills (e.g.,	use of critical thinking skills (e.g.,	critical thinking skills (e.g.,	critical thinking skills (e.g.,
Critical Thinking	analyzes perspectives, uses	analyzes perspectives, uses	analyzes perspectives, uses	analyzes perspectives, uses
CHUCAI THIIRING	inductive and deductive reasoning,			
	and creates metaphors).	and creates metaphors).	and creates metaphors).	and creates metaphors).

GRADE 11 SCIENCE

The distinguished science student, when compared to age appropriate goals and standards, is considered to be 'above grade level' in terms of engaging in scientific activity and learning. The words 'extensive' and 'sophisticated' are used often as descriptors for this level. Extensive should be understood as the student provides fully developed responses which include supporting, relevant details that are accurate and appropriate, vocabulary and concepts from the discipline are used, and connections to the real world, across disciplines or within the discipline, are made. 'Sophisticated' implies that the student's work reflects maturity above grade level, and responses, which are complex, supported by elaborate details.

The proficient science student, when compared to age appropriate goals and standards, is considered to be 'on target' in terms of engaging in scientific activity and learning. The word 'appropriate' is used often as a descriptor for this level. When it is used, it suggests that the student provides responses that include support/justification, relevant details, and which demonstrate an understanding of concepts and vocabulary. Occasional inaccuracies, which do not interfere with conceptual understanding, may be present.

The apprentice science student, when compared to age appropriate goals and standards, is considered to be 'developing' in terms of engaging in scientific activity and learning. The word 'basic' is used often as a descriptor for this level. When it is used, it is intended to suggest that the student provides partial responses or responses which are limited in either accuracy or explanation, and which demonstrate limited understanding of the vocabulary and concepts of the discipline.

The novice science student, when compared to age appropriate goals and standards, is considered to be more of a 'beginner' in terms of engaging in scientific activity and learning. The word 'minimal' is used often as a descriptor for this level. When it is used, it is intended to suggest that the student demonstrates little understanding of concepts and vocabulary, and that responses include inaccuracies/misconceptions and/or little explanation. The following describe science performance:

	DISTINGUISHED	PROFICIENT	APPRENTICE	NOVICE
	Student demonstrates extensive	Student demonstrates appropriate	Student demonstrates basic	Student demonstrates minimal
	knowledge of science content as	knowledge of science content as	knowledge of science content as	knowledge of science content as
	outlined in the core content (i.e.,	outlined in the core content (i.e.,	outlined in the core content (i.e.,	outlined in the core content (i.e.,
	Structure of Atoms; Structure and	Structure of Atoms; Structure and	Structure of Atoms; Structure and	Structure of Atoms; Structure and
	Properties of Matter; Chemical	Properties of Matter; Chemical	Properties of Matter; Chemical	Properties of Matter; Chemical
	Reactions; Motions and Forces;	Reactions; Motions and Forces;	Reactions; Motions and Forces;	Reactions; Motions and Forces;
	Conservation of Energy and	Conservation of Energy and	Conservation of Energy and	Conservation of Energy and Increase
	Increase in Disorder; Inter-actions of	Increase in Disorder; Interactions of	Increase in Disorder; Interactions of	in Disorder; Interactions of Energy
	Energy and Matter; Energy in the	Energy and Matter; Energy in the	Energy and Matter; Energy in the	and Matter; Energy in the Earth
Content	Earth System; Geochemical Cycles;	Earth System; Geochemical Cycles;	Earth System; Geochemical Cycles;	System; Geochemical Cycles; The
Content	The Formation and Ongoing	The Formation and Ongoing	The Formation and Ongoing	Formation and Ongoing Changes of
	Changes of the Earth System; The	Changes of the Earth System; The	Changes of the Earth System; The	the Earth System; The Formation and
	Formation and Ongoing Changes of	Formation and Ongoing Changes of	Formation and Ongoing Changes of	Ongoing Changes of the Universe;
	the Universe; The Cell; The	the Universe; The Cell; The	the Universe; The Cell; The	The Cell; The Behavior of
	Behavior of Organisms; The	Behavior of Organisms; The	Behavior of Organisms; The	Organisms; The Molecular Basis of
	Molecular Basis of Heredity;	Molecular Basis of Heredity;	Molecular Basis of Heredity;	Heredity; Biological Change; The
	Biological Change; The	Biological Change; The	Biological Change; The	Interdependence of Organisms;
	Interdependence of Organisms;	Interdependence of Organisms;	Interdependence of Organisms;	Matter, Energy, and Organization in
	Matter, Energy, and Organization in	Matter, Energy, and Organization in	Matter, Energy, and Organization in	Living Systems).
	Living Systems).	Living Systems).	Living Systems).	

	DISTINGUISHED	PROFICIENT	APPRENTICE	NOVICE
	Student demonstrates sophisticated	Student demonstrates application of	Student demonstrates application of	Student demonstrates ineffective
	application of appropriate science	appropriate science process/inquiry	some appropriate science	application of appropriate science
	process/inquiry skills (i.e., refines	skills (i.e., refines and refocuses	process/inquiry skills (i.e., refines	process/inquiry skills (i.e., refines and
	and refocuses questions, uses	questions, uses appropriate	and refocuses questions, uses	refocuses questions, uses appropriate
	appropriate equipment, tools,	equipment, tools, techniques,	appropriate equipment, tools,	equipment, tools, techniques,
	techniques, technology, and	technology, and mathematics to	techniques, technology, and	technology, and mathematics to
	mathematics to gather, analyze, and	gather, analyze, and interpret	mathematics to gather, analyze, and	gather, analyze, and interpret scientific
	interpret scientific data, uses	scientific data, uses evidence to	interpret scientific data, uses	data, uses evidence to develop
Process/Inquiry	evidence to develop scientific	develop scientific explanations,	evidence to develop scientific	scientific explanations, designs and
	explanations, designs and conducts	designs and conducts scientific	explanations, designs and conducts	conducts scientific investigations,
	scientific investigations, reviews	investigations, reviews and analyzes others' investigations, formulates	scientific investigations, reviews and analyzes others' investigations,	reviews and analyzes others' investigations, formulates testable
	and analyzes others' investigations, formulates testable hypotheses) to		formulates testable hypotheses) to	hypotheses) to solve problems and /or
	solve problems and /or address	testable hypotheses) to solve problems and /or address issues	solve problems and /or address	address issues related to Science and
	issues related to Science and	related to Science and Technology,	issues related to Science and	Technology, Science in Personal and
	Technology, Science in Personal	Science in Personal and Social	Technology, Science in Personal	Social Perspectives, and History and
	and Social Perspectives, and History	Perspectives, and History and	and Social Perspectives, and History	Nature of Science.
	and Nature of Science	Nature of Science.	and Nature of Science.	rvature of Science.
	Student demonstrates <i>extensive</i>	Student demonstrates <i>appropriate</i>	Student demonstrates <i>basic</i>	Student demonstrates minimal
	understanding of unifying science	understanding of unifying science	sometimes fragmented,	understanding of unifying science
	themes/concepts (i.e., Patterns,	themes/concepts (i.e., Patterns,	understanding of unifying science	themes/concepts (i.e., Patterns,
Themes/Concepts	Systems, Scale and Models,	Systems, Scale and Models,	themes/ concepts (i.e., Patterns,	Systems, Scale and Models,
	Constancy, and Change Over Time).	Constancy, and Change Over Time).	Systems, Scale and Models,	Constancy, and Change Over Time).
		,	Constancy, and Change Over Time).	,
	Student demonstrates sophisticated	Student demonstrates appropriate	Student demonstrates basic	Student demonstrates ineffective
	communication skills by organizing	communication skills by organizing	communication skills (e.g.,	communication skills. Lacks skill in
	information; representing data in	information; representing data in	information organization;	organizing information; representing
	several ways (e.g., graphs, drawings,	more than one way (e.g., graphs,	representation of data;	data (e.g., graphs, drawings, tables,
	tables, words); communicating (e.g.,	drawings, tables, words);	communication of designs,	words); communicating designs,
Communication	draw, graph, write) designs,	communicating designs, procedures,	procedures, observations, and results	procedures, observations, and results
<u></u>	procedures, observations, and results	observations, and results of	of investigations; supporting with	of scientific investigations; using
	of scientific investigations; using	scientific investigations; using	evidence; using appropriate	evidence to support conclusions; using
	evidence to support conclusions;	evidence to support conclusions;	vocabulary; and addressing purpose	appropriate vocabulary; and
	using appropriate vocabulary; and	using appropriate vocabulary; and	and audience).	communicating in a form suited to the
	communicating in a form suited to	communicating in a form suited to		purpose and audience.
	the purpose and audience. Student consistently demonstrates	the purpose and audience. Student demonstrates <i>appropriate</i>	Student demonstrates <i>basic</i> use of	Student demonstrates <i>minimal</i> use of
	use of critical thinking skills (e.g.,	use of critical thinking skills (e.g.,	critical thinking skills (e.g.,	critical thinking skills (e.g., evaluates,
Critical Thinking	evaluates, synthesizes, applies,	evaluates, synthesizes, applies,	evaluates, synthesizes, applies,	synthesizes, applies, generalizes,
		L CVATUAICS SVIIIIESIZES AUDITES	i Cvaiuaics, sviilliesizes, audiles.	i sviiliusizes, audites, generalizes.
Critical Thinking	generalizes, debates).	generalizes, debates).	generalizes, debates).	debates).